

Notice of Allowability

Application No.

10/731,157

Applicant(s)

KOMURO ET AL.

Examiner

Art Unit

Barbara Summons

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment received 30 June 2005.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>5/2/05</u> | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

The Examiner partially agrees with Applicants' arguments received 6/30/05. In particular, the Examiner disagrees with Applicants' assertion that the Examiner as a "basis for the outstanding rejection relies on the disclosure in the present Specification at paragraph [0072] to support the position of inherency" (see page 14, lines 10-12 of the amendment received 6/30/05), and disagrees that the presence of stacked crystal filters (SCF) circuits in Ella (Fig. 11a) has any bearing on whether the series resonators 3 and 14 and parallel resonators 2 and 15 meet the recited claim language. The Examiner's basis for the inherency was that the ZnO and SiO₂ layers have different thicknesses between the series and parallel resonators and that ZnO and SiO₂ have opposite signs (plus/minus) of temperature coefficients of elastic constants, and the Examiner pointed to the specification only to show that this fact is admitted by Applicants. The Examiner cited other art of record that clearly provides evidence that the plus/minus signs of these materials are different and that when the ratio of the thicknesses of SiO₂ to ZnO is varied, the rate of frequency change with temperature change is also varied; which art included US 6,556,103 (especially Fig. 12 thereof and col. 7, lines 48-67) that was discussed at length in paragraph 9 of the prior Office action.

However, when the actual values of the thicknesses of these layers of Ella are used to calculate the ratios, the results show the series resonators have SiO₂/ZnO of $62\text{nm}/2362\text{nm} = 0.026$ and the parallel resonators have $312\text{nm}/2362\text{nm} = 0.132$. Looking then to Fig. 12 of US 6,556,103, one cannot determine that these ratios

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"necessarily" provide different rates of frequency change with temperature change because the ratio of 0.026 is so low that the lower end of the curve would have to be extrapolated, and it may be flat in that area. That is, if the ratios in Ella were in the range of 0.3 to 0.8 where the slope of the curve for the fundamental wave is great, then the inherency argument would hold because different ratios of SiO_2 to ZnO do indeed "necessarily" provide the characteristic of different rates of frequency change with temperature change as evidenced by the prior art of record being US 6,556,103 Fig. 12. But, for ratios below 0.15 or near 2.0 where the curve is flat, the characteristic of different rates of frequency change with temperature change between the series and parallel resonators that provide the high frequency side and low frequency side attenuation extremum, respectively, are not "necessarily" provided as is required for an inherency argument.

Therefore, the prior art of record cannot be said to disclose or fairly suggest a filter having all of the recited features, especially the feature discussed above and recited in the last paragraph of claim 1. The reasons for allowance of the previously indicated allowable independent claims 6, 11 and 16 remain as stated in paragraph 9 of the prior Office action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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September 13, 2005



BARBARA SUMMONS
PRIMARY EXAMINER